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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/560,815	12/15/2005	Seiichi Saito	8007-1101	9007
<small>465</small> YOUNG & THOMPSON 209 Madison Street Suite 500 ALEXANDRIA, VA 22314			<small>7590</small> EXAMINER USELDING, JOHN E	
			ART UNIT 1796	PAPER NUMBER
			MAIL DATE 01/12/2009	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/560,815

**Applicant(s)**

SAITO, SEIICHI

**Examiner**

JOHN USELDING

**Art Unit**

1796

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 05 December 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-5, 7-15 and 20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5, 7-15 and 20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SI/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-5, 7-15, and 20 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Although it is appreciated that the particular embodiments of the polyfunctional vinyl ether component mentioned in Applicants' Specification are, themselves, devoid of carbonyl and hydroxyl groups, there is no evidence that Applicant had contemplated their exclusion either. Therefore, the limitation added to claim 1 represents new matter.

### ***Claim Rejections - 35 USC § 103***

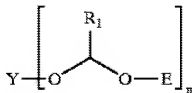
The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

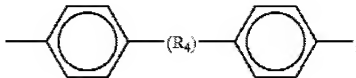
Claims 1-5, 7-8, 10-15, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Crane et al. (6,667,194) in view of Seiichi et al. (JP 2001-354836), as evidenced by Suzuki et al. (2003/0059978).

Applicant claims a composition comprising a polyfunctional vinyl ether compound, a polyhydric phenol compound, and a flame retardant, wherein the composition contains 10-30 parts by weight of a phosphorus-based flame retardant per 100 parts of the total of the polyfunctional vinyl ether compound and the polyhydric phenol compound (claim 1). Applicant claims 100 parts polyfunctional vinyl ether, 30-200 parts polyhydric phenol, 10-3000 parts filler, and 10-200 parts flame retardant (claim 2). Applicant claims that the polyfunctional vinyl ether is a tetra- or higher functional compound (claims 3, 10). Applicant claims a particular polyhydric phenol resin (claims 4, 11, 12). Applicant claims 10-1000 parts silica filler (claims 5, 13-15). Applicant claims a particular phosphorus-based flame retardant (claims 7, 20). The composition further comprises a polyepoxy compound (claim 8).

Crane et al. teach a sealing composition for a semiconductor (column 1, lines 15-26). The composition comprises an epoxy resin (column 12, lines 61-64), polyfunctional phenol curing agent (column 13, lines 38-50), and a polyfunctional vinyl ether. The polyfunctional vinyl ether can be formula II:

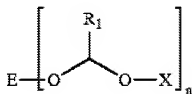


when Y is

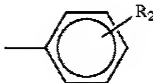


Substituent E is derived from an alkenyl group and therefore can make this a vinyl ether (column 4, lines 1-4). Given that Y can be a functional group, the  $R^1$  substituent can be reactive functional groups (column 9, lines 30-33) and that n is from 2-30, desirably from 2-6 (column 7, lines 44-48) this would be a tetra-functional or higher vinyl ether.

The vinyl ethers can also be formula III:



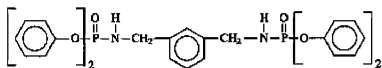
when Y is



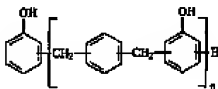
Substituent E is derived from an alkenyl group and therefore can make this a vinyl ether (column 4, lines 1-4). Given that  $R_2$  can be a functional group (column 4, lines 15-18), the  $R^1$  substituent can be reactive functional groups (column 9, lines 30-33) and that n is from 2-30, desirably from 2-6 (column 7, lines 44-48) this would be a tetra-functional or higher vinyl ether. The vinyl ether prevents the corrosion during heating (column 3, lines 7-15). The vinyl ether is used from 1-80 wt% (column 17, lines 26-35). They also teach using 0.1-70% by weight silica as inorganic filler (column 18, lines 1-8).

What Crane et al. fails to teach is the phosphorus flame retardant, the particular polyhydric phenol in claims 4, 11, and 12, and the mixing ratios of the components that are claimed.

Seiichi et al. teach a fire retardant epoxy composition containing a fire retardant of the structure (formula 23):



and an epoxy curing agent that is a polyfunctional phenol (0067) of the structure (Table 1):



Seiichi et al. teach that their composition especially suited for electrical devices (0071, 0092). Suzuki et al. is being used as an evidentiary reference to show that it is known in the art to add phosphorus flame retardants in epoxy resin sealant compositions for semiconductor devices (0025).

Since Seiichi et al. teach a composition for electrical devices and it is known to use phosphorus flame retardants in sealant compositions for semiconductor devices it would have been obvious to one of ordinary skill in the art to included the phosphorus based flame retardant of Seiichi et al. into the sealant composition of Crane et al. to make a flame retardant sealant composition. It also would have been obvious to have

used the polyfunctional phenol curing agent of Seiichi et al. for the polyfunctional phenol curing agent of Crane et al. It is obvious to optimize result effective variables. It would have been obvious to have optimized the amount of phosphorus flame retardant depending on the desired flame retardancy. It would have been obvious to optimize the polyhydric phenol curing agent depending on the hardness of the epoxy resin that was desired. It would have been obvious to have optimized the amount of the silica filler depending on the additional fire retardant, heat resistance, and moisture resistance desired for the epoxy resin. It would have been obvious to have optimized the amount of polyfunctional vinyl ether depending on the desired corrosion prevention during heating.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Crane et al. (6,667,194) in view of Seiichi et al. (JP 2001-354836) as evidenced by Suzuki et al. (2003/0059978) and Hawley's Condensed Chemical Dictionary.

Crane et al. also teach a prepreg formed by using their composition. The dictionary definition is "a term used in the reinforced plastics field to mean the reinforcing material containing or combined with the full complement of resin before molding" (Hawley's). Crane et al. have the full complement of resin and reinforcing material before molding.

***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JOHN USELDING whose telephone number is (571)270-5463. The examiner can normally be reached on Monday-Thursday 6:30am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Eashoo can be reached on 571-272-1197. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

John Uselding  
Examiner  
Art Unit 1796

/Marc S. Zimmer/  
Primary Examiner, Art Unit 1796